ATHABASCA REGIONAL SERVICES STUDY

PART ONE

REGIONAL ANALYSIS

Prepared for :

Government of Saskatchewan
Department of Northern Saskatchewan

Government of Canada
Department of Regional and Economic Expansion

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Dear Sirs:

We are pleased to submit this final Report of the Athabasca Regional Services Study. The report is presented in two phases, each produced in a separate document. Phase I relates to an analysis of the region, its population, the services delivered to that population and options regarding regional centres from which these services could be delivered. It concludes that Uranium City should be retained as the Regional Service Centre through the reasonable life of the existing hospital. Phase II consists of a Plan for the downsizing of Uranium City into a size and form that will enable necessary increases in efficiency of operation.

We trust that you will agree that implementation of this Plan will produce a system that will constitute the most effective and efficient option that was available for the delivery of services throughout the Athabasca Region.

We would like to thank the Steering Committee for the assistance that was provided throughout the Study. We would also like to thank the Mayor, Council and Administration of Uranium City, particularly Mr. Joe Oliver, for the assistance that they provided in the completion of Phase II of the project.

Yours sincerely,

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EXECUTIVE SUMMARY
PHASE I - REGIONAL ANALYSIS

In this Phase of the Athabasca Regional Services Study, the basic objectives were to:

a) identify the location and composition of the population that utilize the regional services that are delivered out of Uranium City;

b) to define the complete range of services that they obtain from Uranium City;

c) to determine the need to continue delivering this range and level of services; and

d) to identify the appropriate location(s) and means for providing regional services to the people of the Athabasca Region.

The regional population was studied in terms of its numbers, age, sex, place of residence and general need for services. Following the research on the user population, a number of alternative regional service centres were identified for evaluation as to suitability. The major determining factor in this evaluation was that of cost-effectiveness as determined through cost-benefit analyses.

The key findings and conclusions of this Phase of the Study are:

1. The Athabasca Region, generally defined as that area to the north of Lake Athabasca and Black Lake, is currently the residence of about 4,000 people, split equally between Alberta and Saskatchewan. In Saskatchewan, the population is con-

centrated in the communities of Camsell Portage, Uranium City, Fond du Lac, Stony Rapids and Black Lake.

2. Although the regional population has declined substantially with the decline of Uranium City, the remaining portion of the population is growing rapidly. A population increase to 3,000 can be expected on the Saskatchewan side by the end of the century.

3. The regional concentration of the population is shifting geographically to the east and culturally to a predominance of Treaty Indians. Treaty Indians, by the end of the century, will comprise seventy-five percent of the regional population.

4. Economic and social goods and services will continue to be required by those people.

5. The continued efficient delivery of goods will necessitate the maintenance of some form of surface transportation linkage to the Region, whether it be by water, road or air.

6. The major regional services provided by Uranium City are hospital and medical services. Some government and commercial services are being provided as well.

7. The delivery of services to and within the Region may occur according to one of the following options: a) continued delivery primarily out of Uranium City; b) delivery primarily out of Stony Rapids; or c) delivery out of other centres such as La Ronge, Prince Albert and/or Saskatoon.

8. It is estimated that the retention of the hospital and of government services in Uranium City will sustain a population of about 250. The relocation of the hospital and government

services would lead to a population decrease to one hundred or lower.

9. The people of the Region clearly prefer to have the services delivered from within the Region.

10. Through cost-benefit analysis, it was determined that the most efficient option is to continue to deliver services out of Uranium City until the existing hospital requires major capital expenditures, and provided that the medical care delivery system provides an effective service to the people of the region.

11. At the time that it is determined that the delivery of hospital services from Uranium City is no longer viable, the origin of services in the delivery system will have to be reassessed in the light of changes within and concerning the Region to determine the best permanent location for the delivery of these services.

12. If circumstances dictate that Uranium City should be retained as the Regional Centre in the long term, planning should occur to ensure that such a function can be effectively and efficiently sustained.

13. If, on the other hand, circumstances dictate that the regional services should be delivered out of some other centre, planning will have to occur accordingly.

14. A number of issues affecting the viability of regional communities were identified in the course of this study but were beyond the scope of its terms of reference. Such issues as surface and air transportation, education, energy and economic development need to be addressed and resolved on a regional basis.

INTRODUCTION

This phase of the study is being undertaken to determine the service needs of the Athabasca Region of Northern Saskatchewan and to select, through cost-benefit analyses, the community(s) which would be most suitable as the Regional Services Centre(s).

A basic consideration to the provision of Regional Services throughout the Athabasca Region is that, even if the Uranium City population were to diminish to zero, the regional population, including Fort Chipewyan, will be four thousand, equally distributed between Alberta and Saskatchewan, and growing. Given that these people will continue to require at least ten thousand tons of petroleum and dry freight per year, not including materials for capital expansion programs, it would seem that a surface transportation system of some sort will be required. A number of options including various combinations of winter roads, all-weather roads, barges and air services are being considered by the Province and the Federal Government.

Unless people are forced to leave Uranium City, and that does not appear to be a viable option, it will survive as a community for some time for the following reasons:

1. A number of people, particularly those on Welfare and some of the local retired people, will choose to continue to live in Uranium City. They have little to gain by living elsewhere and such a move would generate significant social costs.

2. Even if another centre were chosen as the proposed Regional Service Centre, it would take a number of years before the necessary infrastructure for the delivery of services from that centre could be developed. In the interim period, the options are to continue to deliver those services from Uranium City,

where the infrastructure and service personnel are essentially already in place, or to deliver those services from a southern location such as La Ronge or Saskatoon.

The people of the Athabasca Region, except those from Wollaston, wish to have hospital services available within the region for the following reasons:

1. As a result of the uncertainty associated with being able to fly south for hospital services such as related to pregnancy, people are frequently sent out earlier than desirable. This results in long and costly waiting periods. Furthermore, after release, it is the patient's responsibility for the long trip home, which has become complicated by the fact that scheduled air services have diminished.

2. There is a difficult language barrier between people from the Region and those in the south. About thirty percent of those people from the Region speak only Chipewyan and translators are not readily available in the south.

3. Mothers who have to leave the Region for long periods encounter problems related to the care of the children which are left behind.

Whereas concerns have been expressed concerning the continued availability of electrical power in the communities in the Region, such fears have been allayed. S.P.C. has given assurance that such service will continue to be maintained either from hydro facilities or from diesel-electric generators as long as people live in these communities.

The study evaluates the region, its communities, the people and the types and levels of services they require. It then proceeds to identify options for the delivery of these services. Cost factors are then applied to each so they can be compared through cost-benefit analysis. The cost-benefit analyses indicate that:

1. Because the facilities are already in place at Uranium City, delivery of services from this centre offers the least cost option for the short to medium term future; and

2. Since the operating costs are higher for Uranium City than the other options, it may be desirable to consider an alternative location from which to provide services to the region when the facilities in Uranium City require replacement.

In order to facilitate a comprehensive approach, social implications of the various service centre locations as perceived by representatives of regional communities are presented along with economic costs and benefits in the final analysis.

I. BACKGROUND UP TO DECEMBER 1981

A. Uranium City as a Regional Centre

Uranium City was a community with a fairly stable population of approximately three thousand people until December of 1981. Directly and indirectly the community was supported economically by Eldorado Nuclear Limited's Beaverlodge Mine which employed approximately 830 people. This nucleus of activity provided the basis for an impressive array of commercial, retail and service outlets, a hospital, schools, provincial and federal government services and the local administration.

Bulk freight transport to and from Uranium City and adjacent areas was provided primarily by Northern Transportation Company Limited's barge service out of Fort McMurray, Alberta. A secondary, mid-winter service was provided via a winter road constructed by Saskatchewan Highways and Transportation as an extension of the Cluff Lake highway (see Plate 1).

Passenger service was provided by regularly scheduled airlines and private charter companies out of Uranium City's airport. Norcanair maintained a scheduled air service, using Fairchild F-27 turbo prop aircraft, to La Ronge, Prince Albert, Saskatoon and Regina. Air travel linkages to Fort McMurray and Edmonton were provided by Pacific Western Airways using Boeing 737 jet aircraft.

Power to Uranium City was generated by hydro facilities owned and operated by E.N.L. who sold this power to North-Sask Electric Ltd. for local distribution.

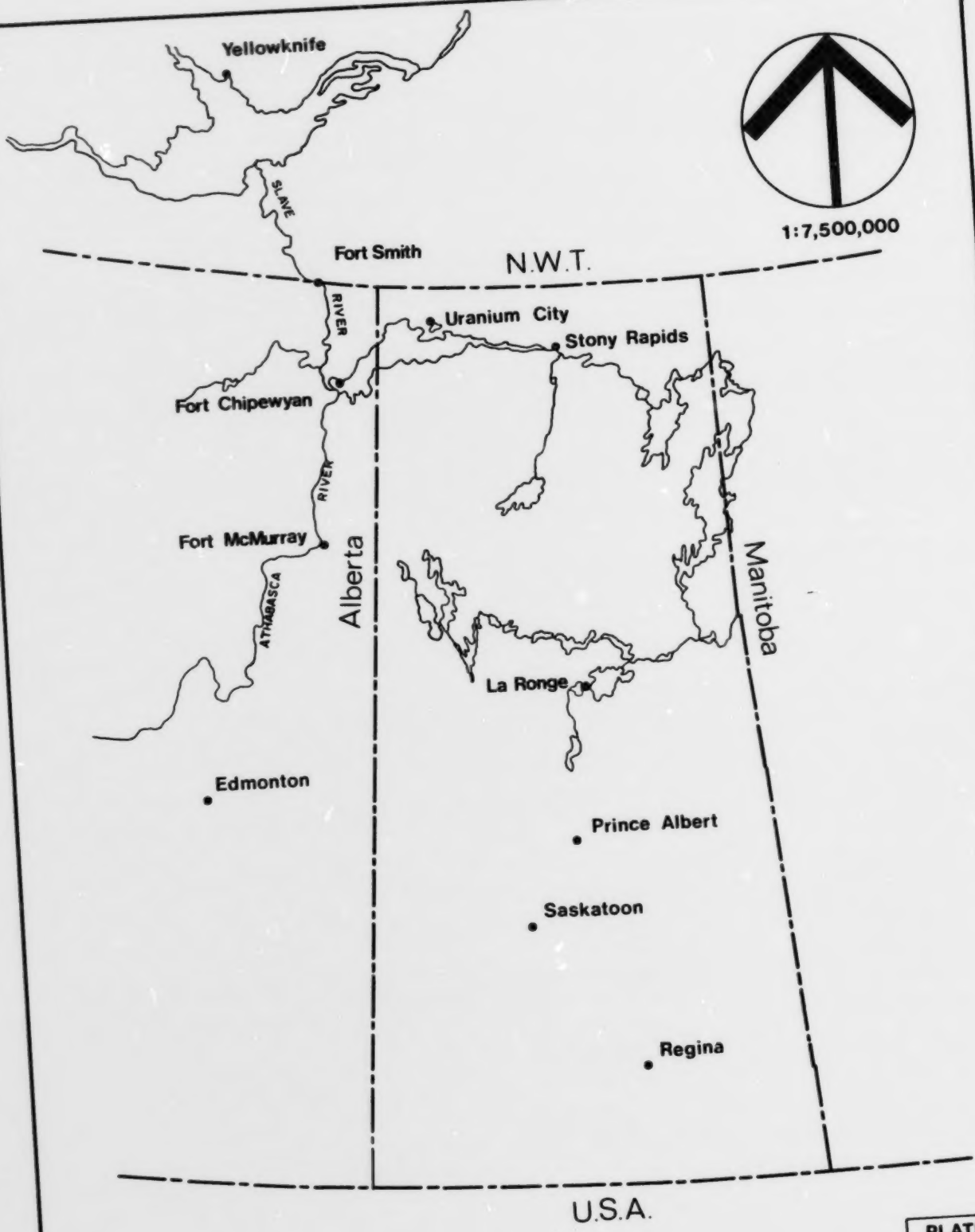


PLATE 1

LOCATION

Several of the services available in Uranium City were extended to the communities of Camsell Portage, Fond du Lac, Stony Rapids and Black Lake, which are located along the north shore of Lake Athabasca and on the Fond du Lac River system, within 120 miles of Uranium City. These communities, along with Uranium City, are, collectively (see Plate 2), the communities of the Athabasca Region in Saskatchewan. In 1981 the regional population was approximately 4,230, distributed within the region as shown in Table 1. Since Fond du Lac and Black Lake are Indian Reserves, about one-quarter of the regional population was composed of Treaty Indians living on these two Reserves. However, Uranium City, with two-thirds of the population, clearly dominated the region.

TABLE 1

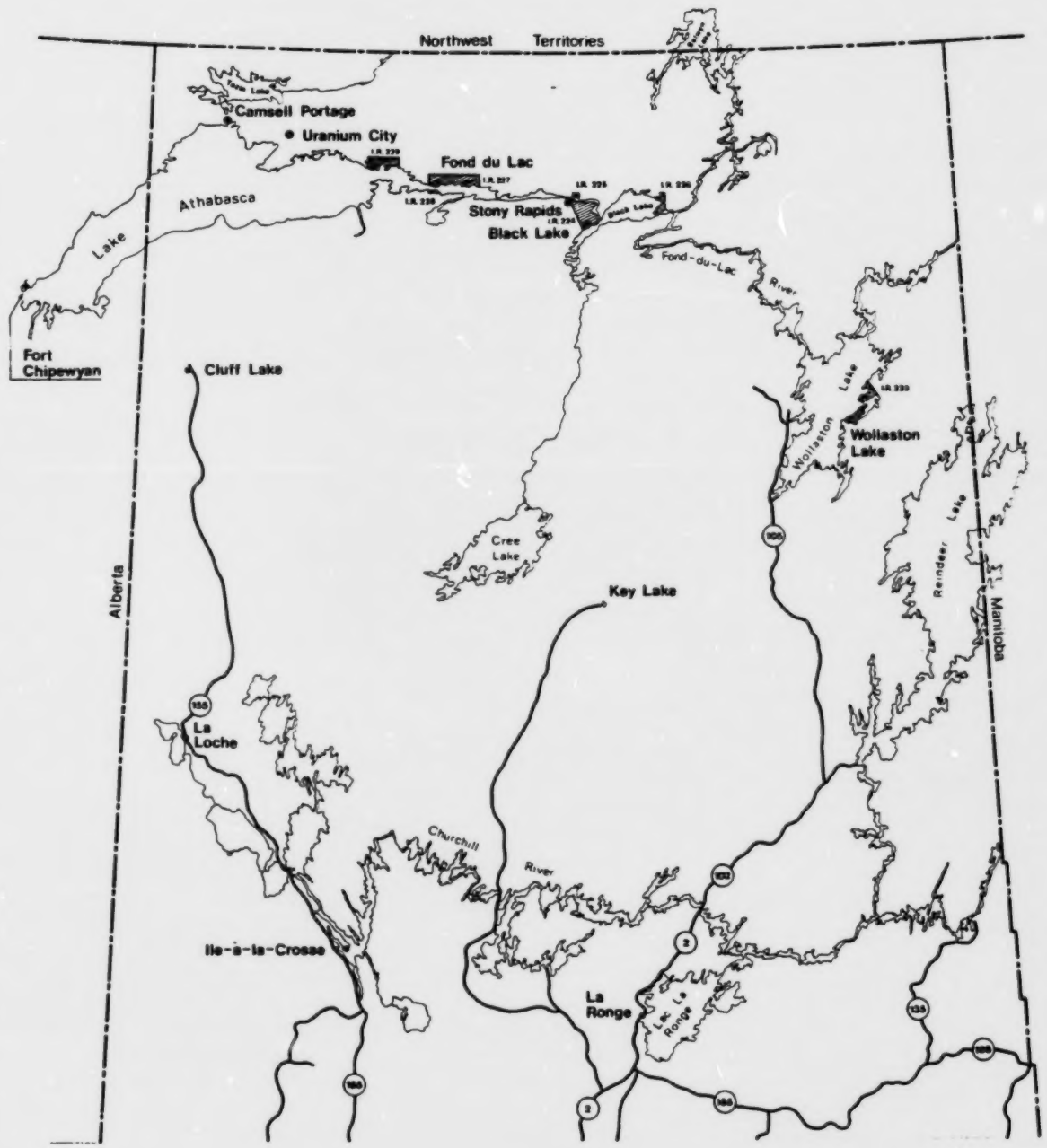
POPULATION OF ATHABASCA REGION (SASKATCHEWAN)

1981

	Population	Percentage
Uranium City	2750[1]	65.0
Black Lake	662[4]	15.6
Fond du Lac	519[4]	12.3
Stony Rapids	240[1]	5.7
Camsell Portage	60[3]	1.4
Regional Population	4231	100.0

Sources:

1. Statistics Canada.
2. Saskatchewan Hospital Services Plan.
3. D.N.S. Municipal Census, 1980.
4. Department of Indian and Northern Affairs, 1980.



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REGIONAL CONTEXT

PLATE 2

In addition, a limited range of services was extended to Wollaston Lake, located 215 miles to the east, and Fort Chipewyan, Alberta, 110 miles to the west. However, these communities had much stronger links to southern communities than to Uranium City. Wollaston Lake's links were to La Ronge and Prince Albert, while Fort Chipewyan was served primarily by Fort McMurray.

Despite the concentration of the regional population in Uranium City, a majority of the clients of certain services, including health, medical and social services, appear to have been from outside of Uranium City. For example, sixty percent of the people released from hospital from April, 1981, to March 31, 1982, were from the regional communities or beyond the region. The pattern of releases by community is shown in Table 2.

TABLE 2

RELEASES FROM URANIUM CITY HOSPITAL: 1981-1982

Residence	Number of Releases	Percentage of Total
Uranium City (including Camsell Portage)	570	41.7
Fond du Lac Band	324	23.7
Fond du Lac (DNS jurisdiction)	7	0.5
Stony Rapids Band (Black Lake)	198	14.5
Stony Rapids	52	3.8
Non-regional within Province	67	4.9
Out of Province	150	11.0
Total	1368	100.1

Source: Saskatchewan Hospital Services Plan.

It is noteworthy that hospital utilization by the people from outside of Uranium City is higher on a per capita basis than by the people from within Uranium City. In 1981 there were only sixteen instances where people from the region were treated in hospitals outside of the region compared to 1151 hospitalizations of regional residents at the Uranium City Hospital. Significantly, the Uranium City Hospital handled the great majority of hospitalizations of regional residents.

Similarly, it appears that a majority of clients in the various programs (Social Assistance Plan, Probation, Family Services, Alcohol Education) were from outside Uranium City.

Other services provided to all or part of the region from Uranium City included the sale of hardware, dry goods and some food from E.N.L.'s store and, to a lesser extent, the Hudson's Bay Store. The bank and the Liquor Board Store were the only two such stores within the entire region. The hotel and "motel" in Uranium City obviously served non-residents from the region and beyond. The airport and float plane base provided facilities for flights destined to regional points and beyond as well as in-coming flights from the region and elsewhere. Tourists, especially sports fishermen, as well as exploration crews were frequent non-local users of these facilities.

Other functions served at least part of the region outside of Uranium City. Sask Tel, the Resource Officers, and D.T.R.R. radio-telecommunications operator served the Camsell-Uranium-Fond du Lac communities and surrounding areas.

Significantly, the elementary and high schools in Uranium City provided virtually no regional function. All of the adjacent communities have elementary schools and, although none of these

communities have high schools, only two or three students from outside of Uranium City attended the Candu High School.

B. Functional Linkages Between Adjacent Communities and Uranium City

1. Camsell Portage

Camsell Portage, a community of sixty people (mostly non-status Cree and Chipewyan Indians), is situated on the north shore of Lake Athabasca approximately twenty-five air miles due west of Uranium City. Six of the gainfully employed residents work at Gulf Minerals Canada Limited, now Eldorado Resources Limited, on Wollaston Lake, and are rotated in and out by Eldorado's air shuttle service. Other occupations include a government employee, teaching and the traditional pursuits of trapping, fishing, and hunting. There is an elementary school in Camsell Portage with seventeen students in attendance in 1982-83. Significantly, only one resident was receiving social assistance in 1982-83, and this assistance is for raising an adopted child. This is an indication of the independence and self-sufficiency of community members.

Since there is no general store, Camsell Portage depended almost wholly on Uranium City for resupply. Travel for resupply occurs by private boat or snowmobile and charter aircraft. Camsell Portage was likewise dependent on Uranium City for all of the regional services provided from that community. Power is provided locally by North-Sask Electric Ltd. diesel-electric generator. The N.T.C.L. barge stopped at Camsell Portage on its Uranium City and Lake Athabasca run primarily to off-load fuel for the generator.

2. Fond du Lac

The community of Fond du Lac is located on the north shore of Lake Athabasca approximately fifty air miles east of Uranium City. Fond du Lac is primarily an Indian Reserve, with the exception of an estimated sixteen people who are teachers, nurses or Bay staff. The Band population living on Reserve numbered 494 in 1981 according to Statistics Canada and 519 according to the Department of Indian Affairs. Approximately one-half the population is under fifteen years of age, while an additional five percent are over sixty. The population increase averaged about 2.5 percent per year between 1976 and 1981 according to Statistics Canada data. This seems rather low considering the youthfulness of the population, and may indicate some out-migration.

Of the larger communities in the Athabasca region, Fond du Lac appears to have developed closer linkages with Uranium City than any of the others. A number of families from Fond du Lac had settled in Uranium City and nearly all of the Uranium City functions extended to the region were provided to Fond du Lac. Shopping and social visits to Uranium City by boat, snowmobile and charter aircraft from Fond du Lac were common. In addition, weekly visits by Uranium City doctors were conducted and nurses, attached to the nursing station in Fond du Lac, were in contact with Uranium City doctors as necessary for diagnostic advice and drug prescription. Patients requiring hospitalization were flown to Uranium City by charter or scheduled aircraft for treatment. Patients with illness or injuries requiring specialist services were flown to a centre in the south by scheduled or charter aircraft or by the Province's Air Ambulance, depending on the urgency of the case.

Personnel from Social Services (court and probation), and Resource Officers made periodic and/or "as required" visits to Fond du Lac from Uranium City. Banking, financial, insurance and legal services were provided mainly out of Uranium City. Only R.C.M.P. services are provided to Fond du Lac from Stony Rapids.

In addition to a small nursing station and a new community hall, there are two retail grocery-hardware-dry goods stores in the community; one is a Hudson's Bay Store and the other is privately owned. There is also an elementary school but no high school. Students continuing to high school usually attend the Residential School in Prince Albert. There is also a Catholic Church with a resident priest. A community water system services the school and provides several standpipes for water supply. Power is provided by North-Sask Electric Ltd. generators; however, usage is restricted to lighting and light duty appliances. Apparently the power supply is insufficient to supply the three phase current required for heavier appliances.

Gainfully occupied workers in Fond du Lac are engaged in traditional activities, and in administering D.I.A.N.D. programs through the Band office. Workers are also employed, as required, in constructing housing, Band offices, etc. Apparently none of the mining companies employ workers from Fond du Lac and therefore do not run their air shuttle through this community.

The N.T.C.L. barge stopped at Fond du Lac bringing diesel fuel for the generators, as well as gasoline for autombiles, boats and snowmobiles. Dry cargo was also brought in to resupply the stores. The winter road did not serve Fond du Lac directly, although by supplying Uranium City, it was indirectly serving

Fond du Lac to some extent. Perishable foods were brought into the community by air under a provincial government program which subsidizes air transportation costs from La Ronge.

3. Black Lake

Black Lake is located on Chicken Indian Reserve No. 224, which is occupied by members of the Stony Rapids Indian Band. It is situated approximately 115 miles east of Uranium City on the north shore of Black Lake. It is connected with Stony Rapids, approximately fifteen miles to the northwest, by an all-weather gravel road. The on-Reserve population of the Stony Rapids Band was given as 585 in 1981 by Statistics Canada and as 662 by the Department of Indian Affairs, all but about fifteen being Chipewyan Treaty Indians. Most of these people lived in the community of Black Lake. Nearly one-half the population is under fifteen years of age and another seven percent or so is over sixty. Population growth has averaged about three percent per year in the recent past, based on Indian Affairs statistics.

As with most northern communities, traditional activities, such as hunting, trapping, fishing and guiding, provide the largest number of "jobs", and approximately 115 people are engaged in these activities on a seasonal basis. In addition, there are approximately sixty people employed on a full time basis in the so-called "wage-economy". Government, including Band administered D.I.A.N.D. programs, provides approximately twenty of these jobs. Trades, services, transportation and construction provide another twenty to twenty-five jobs. Approximately sixteen people are employed by the mining industry, twelve being at Rabbit Lake and four by E.N.L. in Uranium City.

In terms of community facilities there is a school that accommodates students from nursery through grade ten. Students taking grades eleven and twelve usually board in Prince Albert. There is a Bay store, a community hall, a health clinic, a church and two pool halls in Black Lake. A new health clinic with attached residences is scheduled for construction in Black Lake in 1984-85 at a cost of $1.33 million. Planes land on the lake, using skiis in winter and floats in summer. The nearest air strip for wheeled aircraft is Stony Rapids.

Health services beyond that which can be provided by the local clinic have been obtained from Uranium City. One of the doctors from Uranium City visited the clinic once a week and was regularly available for consultation or drug prescription by telephone. Hospitalization was provided in Uranium City and, when specialists were required, in the south. Provincial Social Services (court and probation) were provided out of Uranium City to a limited extent, while federal social services were administered from Prince Albert through the District Office of the Department of Indian Affairs. Some hardware, dry goods and liquor were purchased in Uranium City as well. In addition, banking, insurance, financial and legal services were provided from Uranium City, La Ronge or Prince Albert. Resource Officers and the R.C.M.P. serve the community from Stony Rapids.

Most houses have electricity obtained from the North-Sask Electric Ltd. diesel generating system at Stony Rapids, but are heated by wood. There is no centralized sewer system while a rudimentary water system supplies untreated lake water under pressure to the health centre, the school and the Bay store. Liquid waste from individual pumpout tanks is disposed in the sewage lagoon, west of the community.

Black Lake was resupplied by N.T.C.L. barge which unloaded fuel and other supplies in Stony Rapids. In addition the supply of perishable foods by air is subsidized by a provincial government program.

4. Stony Rapids

Stony Rapids is situated approximately one hundred miles east of Uranium City on the eastern arm of Lake Athabasca. It is at the eastern-most point of the Athabasca drainage system that is navigable by barge. The population of Stony Rapids is approximately 240. Most of the people are non-treaty Indian/Metis of Chipewyan descent. Some thirty-eight or so members of the Stony Rapids or Fond du Lac Bands live in Stony Rapids or at nearby Stony Lake, a few miles to the east. Approximately forty-one percent of the population is under fifteen years of age and another seven percent is over sixty. The population has increased at about two to three percent per year in the past five years.

Stony Rapids has the most diversified economic structure of any of the communities in the Athabasca region except for Uranium City itself. There is a higher percentage of full time wage employment, more diversification and less dependence on traditional activities. There are approximately sixty-four full time jobs - nineteen of these are in the government sector, fifteen in trades and services, eighteen in transportation and construction and eleven in mining. The mining jobs are at Rabbit Lake, to which workers are rotated by air shuttle. An additional fourteen people are employed seasonally in traditional activities.

Community facilities on Stony Rapids include a Bay store, Gulf Fuel outlet, pool hall, confectionary, taxi company, aircraft charter company, air strip, float plane base, R.C.M.P. detachment, Resource Office, Post Office, Local Advisory Council office and fire hall, a school with grades from kindergarten through ten and a health clinic. There is also a hotel although it was closed for some time.

Services provided to Stony Rapids from Uranium City included the weekly visit by a doctor and the communications between the resident nurse and doctor as required. Hospitalization was available in Uranium City with more serious cases taken south. Social Services (Social Assistance Plan, Probation, alcohol) were provided out of Uranium City. Some hardware, dry goods and liquor purchases were also made in Uranium City. Banking, financial, insurance and legal services were obtained from Uranium City (or Prince Albert or La Range).

Power is provided by North-Sask Electric Ltd. diesel generators. Generating capacity was increased in 1981. The structure to house the generators has not been completed; completion is apparently awaiting, in part, a decision to determine the disposition of E.N.L.'s hydro facilities west of Uranium City. Buildings are heated by wood and/or oil and sewer and water is available to at least part of the community. Homes not served with sewer and water have a water delivery and septic pump-out service.

Stony Rapids was resupplied by N.T.C.L. barge which unloaded freight and bulk fuel for both Stony Rapids and Black Lake at Stony Rapids. Perishable foods are brought in by air under provincial government subsidy.

5. Wollaston Lake

Although at present Wollaston Lake has few functional linkages with Uranium City, it is mentioned here because it could become part of the same service area if Stony Rapids were selected as the regional service centre. Alternatively, all of the previously mentioned communities could join Wollaston Lake as part of a region served out of La Ronge or Prince Albert if a service centre were not maintained in the north. Only if Uranium City is retained as the service centre would Wollaston Lake remain in a region separate from the other communities previously discussed.

The population of Wollaston Lake is approximately 540 people, 345 of whom are members of the Lac La Hache (Chipewyan) Band. The majority of the other 195 people are non-status Cree Indian/Metis. Approximately fifty percent of the population is under fifteen and another four percent is over sixty. Population growth has averaged approximately four percent per year in the recent past. There are approximately fifty people with full time jobs in Wollaston Lake; government accounts for twenty-three, transportation, communications, trades and services employ an additional fourteen, four have construction jobs and nine are employed by mining companies. Approximately seventy-five additional persons are employed part time in traditional activities, with commercial fishing being somewhat more important in Wollaston than the other communities under consideration.

Community facilities include a Co-op grocery - dry goods-fuel store, a snowmobile dealer, Post Office, air strip, theatre, Band office, L.A.C. office, two pool rooms, two community halls, two air charter companies, a school offering grades from

kindergarten through nine, Resource Office, and a health clinic. An R.C.M.P. detachment office is scheduled for construction in 1983 or 1984.

A doctor from La Ronge visits the health clinic weekly and persons requiring any hospital care go to La Ronge or farther south. In other areas of support, as with medical care, Wollaston Lake depends, in the first instance, on La Ronge. The limited interaction with Uranium City was confined to the very occasional patient who wound up in the Uranium City Hospital, and the provision of social services to Wollaston Lake out of Uranium City.

The ties with La Ronge are facilitated by an all-weather road between the two (Highway 105). Although the road terminates on the opposite side of Wollaston Lake, the community is accessible by winter road when the lake is frozen and is reached by barge when it is not.

Electricity is provided by North-Sask Electric Ltd. diesel generators. The school, health centre, Co-op store, air charter office, L.A.C. office and a portion of the non-status section of the community has sewer and water.

SUMMARY

The five communities discussed in the preceding sections have varied considerably in the degree of dependence on Uranium City and the nature of linkages between each community and Uranium City. Camsell Portage has been almost wholly dependent on Uranium City for goods and services. Fond du Lac has had social ties with Uranium City, and has used its hospital facilities very extensively. This has been the strongest regional function supplied to Fond du Lac. However, policing is provided from Stony Rapids.

Stony Rapids and Black Lake also have relied heavily on Uranium City for hospital and medical services and this remains the greatest linkage. However, these two communities have had police and resource management centralized in Stony Rapids, while a limited range of commercial, professional and personal services have been obtained from Uranium City.

The medical services linkage has not extended to Wollaston Lake, however. As Wollaston's needs are met primarily from the south, this community has not been considered to be a functional part of the Athabasca Region. Even if there were to be a shift of the regional service centre to Stony Rapids, it is a matter of speculation whether Wollaston residents would utilize the medical and other services of Stony Rapids.

II. IMPACT AND FUTURE IMPLICATIONS OF CLOSURE OF BEAVERLODGE MINE

A. Impact: December, 1981 - December, 1982

1. Uranium City

In December, 1981, Eldorado announced that the Beaverlodge operation would close in June, 1982. The closure was effected as announced and most of the mining labour force departed during 1982 although an Eldorado crew of approximately 120 workers has been retained to decommission E.N.L.'s facilities and to comply with environmental clean up requirements. Together with their dependents, the Eldorado presence totals approximately 350 people, all of whom live in Uranium City proper. This crew will be further reduced to approximately twenty-five workers and their families, in total about seventy-five people, in June of 1983. It is anticipated that all but two or three of the twenty-five workers will be removed one year later, in June of 1984.

Other major employers have not reduced their work forces nearly as rapidly as yet. The provincial and federal governments have retained the majority of their staffs, though generally not filling the positions that have become vacant in the past year. Apparently the senior governments are delaying, in part, to see what decision is made regarding the location of the regional service centre.

The hospital remains open but has been effectively down-graded in capability due to the departure of all but one full-time medical doctor. This doctor continues to make the rounds to the adjacent communities but the presence of only one doctor at the hospital, and this only part of the time, makes it impossible

to provide most of the services that were previously available at the hospital. As a result, the majority of the residents of the region requiring hospitalization are being taken south. Hospital staff has declined, largely through attrition, though a substantially complete support staff remains.

The municipal administration continues to function in part because grants, largely from E.N.L., have been maintained at a sufficient level through December, 1982. Apparently this grant will continue, on a scaled down basis, at least through June of 1983. Municipal employment, except for school staff, has yet to be significantly reduced. School enrollment, which was approximately seven hundred in 1981-82 has declined to approximately 215 in 1982-83. As a consequence some consolidation of schools and a reduction of staff from approximately forty-five down to thirteen has occurred.

As a consequence of the departure of the majority of the mining labour force and, to a lesser extent, government, school and hospital employees, the support for the trade and service sector of Uranium City has diminished substantially. The E.N.L. store, the major hotel and many shops have closed. A "motel" remains open, as does the bank, the Bay store, Liquor Board Store, hardware, travel agency and a single cafe.

Some of the business people have left but many, including some whose businesses have shut down, remain.

Power continues to be provided by E.N.L.'s hydro facilities and apparently will continue uninterrupted until other events determine whether the hydro facilities will continue to provide power in this region or whether Uranium City will receive power from another source. Saskatchewan Power Corporation has guaranteed power beyond June of 1983 in any case.

The sewer and water system continues to function.

The majority of the housing units are vacated and most of those vacated are boarded up.

Much of the remaining mobile "capital equipment", at least that portion which is too heavy or insufficiently valuable to be removed by aircraft, whether privately owned or otherwise, is being prepared for removal. The immobile capital, no longer in demand at that location, has declined in value toward what it will bring as salvage, this being, in most cases, close to nothing.

2. Regional Communities

Except for Fond du Lac, the impact of events in Uranium City thus far has only inconvenienced the regional communities. The most noticeable change to date, of course, is related to the provision of medical services. However, the Uranium City doctor still visits once a week, and contact as required by resident nurses, with this doctor, is still available. However, a substantially greater proportion of those requiring hospitalization are being taken south than was previously the case.

In addition to the longer travel time, travel to the south for hospital services sometimes requires a relative or friend accompanying the patient to seek accommodations in a strange place, and, if hotel accommodations are required, at a high price. The chances of a person accompanying a patient to Uranium City finding accommodations with a relative or acquaintance or in a hostel was much greater.

Aside from medical care, there is also the inconvenience of a now substantially smaller trade and service sector in Uranium City. Still, as yet, social services continue to be provided out of Uranium City, the airport remains open, scheduled air service is available, although substantially diminished, the liquor store is open and the Resource Officers and R.C.M.P. are present. Also, of major importance, the communities have yet to experience whatever implications arise from an alteration of previous freight transport arrangements.

Fond du Lac was excepted from other adjacent communities in the opening sentence of this section because, in addition to being affected much as all other communities in those regards mentioned immediately above, Fond du Lac has an additional set of potential impacts to contend with. These additional considerations arise because some sixteen families of status Indians, sixty-five to seventy-five people, from Fond du Lac lived in Uranium City at the time that E.N.L. announced its closure. A number of families have subsequently returned to Fond du Lac and three families apparently will move elsewhere. Approval has been given for an additional twenty houses. Construction materials were brought in over the ice in the winter of 1983 and construction had commenced in spring. The return of these families to Fond du Lac will have additional implications for at least the school and the electrical generating facilities.

3. Transportation Systems

The water, surface and air transport systems alluded to previously connected the remote Athabasca Region with the south

and formed the links between the communities in the region. It is therefore worthwhile to briefly consider the impact on the transportation systems occasioned by the closure of the Eldorado Mine.

i) Freight Transport

As indicated above, freight to and from the Athabasca region was carried primarily on N.T.C.L. barges operating out of Fort McMurray, Alberta. A winter road from Cluff Lake, across Lake Athabasca, to Uranium City provided a distinctly secondary connection with the south. Listed in the table below are the amounts of freight brought into the region by various means in 1980, as reported by Julian Hawryszko in his study of the Athabasca transportation system.

TABLE 3

INBOUND FREIGHT TO ATHABASCA REGION - 1980

	Uranium City	Camsell Portage	Fond du Lac	Stony/ Black Lake
	Tons			
N.T.C.L. Barge				
Bulk Petroleum	38,500	140	235	2,135
Dry Cargo		1	450	1,610
Winter Road	3,000	--	--	--
Air Freight	1,175*	?	98	142

*P.W.A. only. Additional amounts were brought in by Norcanair and on Eldorado Corporate Aircraft.

These figures illustrate both the importance of water transport, as a mode accounting for approximately ninety percent of the inbound tonnage, and Uranium City, as a destination accounting for approximately ninety percent of freight terminating in the region. Outbound freight and movement between the communities is not shown. Hawryszko reports this to be about twenty percent of the volume of inbound cargo.

With the closure of the mine and the departure of the majority of the people from Uranium City, the major industrial demand for freight transport has fallen to virtually nothing and the consumer demand, distinctly secondary, has declined to at least half its former level. While 1983 will be a year of transition during which fairly substantial volumes of freight may be transported, possibly more out than in, 1984 and beyond will see a much smaller requirement for freight transport. An estimate of petroleum and dry cargo freight required to resupply the region for the first few years after 1984, as estimated by Hawryszko, is shown in Table 4.

TABLE 4

ESTIMATE OF PETROLEUM AND DRY CARGO FREIGHT REQUIRED - 1984

	Uranium City* (100 Pop)	Uranium City* (500 Pop)	Camsell	Fond du Lac	Stony Rapids/ Black Lake
	Tons				
Petroleum	100	1200	100	200	2200
Dry Cargo	--	1500	--	500	1700

*Hawryszko's figures for Uranium City were based on the assumption that if it were not retained as a service center, its population would stabilize at 100; as a service centre, it would be 500.

The estimated annual demand is from a low of 4,800 tons to a high of 8,000 tons depending on whether a service centre is retained in the region or not. Compared with the freight moved in 1980, these estimates range from a low of approximately ten percent to a high of less than twenty percent of the petroleum and dry cargo moved by N.T.C.L. in that year. It should be noted, however, that Hawryszko's estimates do not take into account the freight movements necessary to move in the capital goods, such as generators, trucks, water and sewer pipes, lumber and furnishings, required to facilitate the expansion likely in the adjacent communities in the future. This will be commented on later.

The reaction of the management of the various transport modes to the actual and anticipated decline in demand for freight movement was to take steps to reduce the costs incurred in providing their various services. N.T.C.L. moved approximately two-thirds of the tugs and barges serving the Athabasca to the Mackenzie River system and applied to the Canadian Transport Commission to discontinue its service after the 1983 season. Saskatchewan Highways and Transportation indicated that it is unlikely that it will continue to maintain the winter road from Cluff Lake to Uranium City after the 1983 season. Pacific Western Airlines has largely discontinued service to Uranium City although Norcanair has maintained scheduled service on a reduced frequency and the "lake sched" continues to provide services to Uranium City, Fond du Lac and Stony Rapids.

These similar reactions are due to the nature of the costs incurred in providing the services. While tugs, barges and frequency of service can all be reduced, the dock facilities, warehouses, storage tanks, etc., cannot either be

easily moved or quickly scaled down. With Fort McMurray as a base, the dredging must be done whether one trip or many is/are made. Thus many costs are fixed and cause unit costs to rise as usage declines. There is even less flexibility with respect to a winter road. The cost of constructing it is nearly invarient regardless of the number of vehicles using it. Air service is the most flexible of the modes under consideration. Size of aircraft and frequency of service can both be scaled up or down as needed and, while the airport facilities are fixed and not easily expanded or contracted, the commercial air carriers do not own them nor do user charges, when applied, reflect the actual cost of a particular airport.

ii) Passenger Transport

As indicated above, air service is a fairly flexible mode. Size of aircraft can be adjusted and frequency of service modified so that appropriate load factors can be maintained over a very considerable range. Service to Uranium City has been down-graded but scheduled flights to and from Uranium City and adjacent communities continue on what is probably an adequate basis. More urgent needs continue to be met by charter companies operating in the region.

B. Implications of Closure of Beaverlodge Mine: 1983 and Beyond

1. Uranium City

It seems most likely that Uranium City will continue to exist in some truncated form for at least a few years regardless of whether it is maintained as a service centre or not.

To begin with, Eldorado will maintain its work force of twenty-five or so until June of 1984. While E.N.L. will likely move its people to Eldorado townsite, where they could be virtually self-contained, they will still require a school and a place to shop.

The airport could continue to be used even without the flight service station and Minstry of Transport involvement. It will be necessary in order to maintain the E.N.L. crew in the short run but will also be used by mining companies who will continue to stop and pick up the few employees living in Uranium City and Camsell Portage. Exploration crews will continue to use the strip and the float plane docks, sports fishermen will continue to use the airport and/or float plane facilities, etc., thus fuel and some absolute minimum level of maintenance will be required.

Resource Officers will be maintained in Uranium City if it is left up to the Department of Tourism and Renewable Resources. Social Services prefer to serve the Athabacca region from within the region, arguing that they are more effective in this manner. If given an option, Social Services would, therefore, likely remain in Uranium City. If either or both of these departments retain a presence, further use will be made of the airport and other facilities.

Some private individuals state that they intend to remain. In some cases actions reinforce their statements. The owner of the "motel" argues that he could not move the facilities in which he has tied up a lot of money, in any case, and, with the closure of the hotel he may have enough business to at least cover out-of-pocket costs plus something more. Further he is stocking up on groceries, confections and incidentals, antici-

pating that, with the E.N.L. store closed and the Bay, even if it stays, keeping regular hours, he will serve people wanting these items at irregular hours.

If a few people stay, North-Sask Electric Ltd. would provide power by diesel generator even if E.N.L. ceased providing hydro power.

If there is power, a grocery store and an air strip, it is possible that some of the Indian families might choose to stay in Uranium City rather than return to Fond du Lac, or to move elsewhere. As well, older people who have spent much of their life in Uranium City may choose to stay on in retirement.

It, therefore, seems that unless the province is prepared to compel present residents to move from Uranium City and prohibit future habitation, Uranium City could, even with the most minimal support, retain a long term population of up to one hundred people. Compulsory moving is highly unlikely.

Thus it appears most likely that the province will only assist people in moving but will not compel them to do so and that Uranium City will continue to exist for some time. In the cost-benefit analysis to follow, it is assumed that Uranium City will continue to exist as a centre with about one hundred people if it is not retained as the regional service centre.

Table 5 illustrates a possible population and employment scenario based upon the preceding discussion. Under the assumptions of this scenario, the population of Uranium City, even without the regional functions of hospital, government and other services could be up to one hundred. This population would be supported by a labour force of twenty-eight people.

TABLE 5

EMPLOYMENT AND POPULATION

URANIUM CITY LOCAL CENTRE

Type of Employment	Number of Adults Employed	
Commercial		
Motel, General Store, Taxi Driver	2	
Restaurant	1	
Service Station	1	
Trades	1	
Marine Air Base	1	
Government Services		
D.T.R.R. Resource Officers	3	
Airport and Highway Maintenance	2	
Public Health Nurse	1	
Social Services (local services only)	1	
Local and Quasi-Governmental Services		
Municipality	2	
Teachers	2	
R.C.M.P.	2	
Sask Power (diesel maintenance)	1	
Friendship Centre	3	
Other		
Miners (commuting)	4	
Priest	1	
Total Adults Employed	28	
Population Supported by Labour Force (spouses and children)		55
Adults - Retired, Seasonally Employed or on Social Assistance	30	
Children Supported	22	
Population Supported by Non-Labour Force	52	52
Total Community Population		107

[1] Note: It is assumed that one-fifth of the labour force would be single, two-fifths would be married with both spouses working, while two-fifths would be married with one spouse working. Also, It is assumed that each family will include an average of 1.5 children.

A similar scenario for Uranium City as a regional centre has been prepared, as shown in Table 6. The major difference between this and the local scenario is additional employment generated by the hospital and some government services. Consequently, a minor spin-off effect in terms of commercial and educational employment has been assumed as well. The population figure derived for Uranium City as a regional service centre is 246, supported by an active labour force of seventy-four. For the purposes of the cost benefit analysis, a population of 250 is used. The population which could be attributed to the retention of the service centre function, is taken as 150, which is the difference between the regional service centre population and the local centre population. Similarly, a population increase of 150 is assumed for Stony Rapids should it be selected as the regional service centre.

It can be argued reasonably that the population increase for Stony Rapids would be less than 150, as many of the service centre jobs could be filled from the local underemployed labour force. Thus the number of people who would be "imported" from other areas could be reduced. While this is reasonable, without detailed information on the availability of skills in the Stony Rapids/Black Lake area, an estimate of the actual population increment would be somewhat speculative. Consequently the figure of 150 is used in a following analysis.

TABLE 6

EMPLOYMENT AND POPULATION

URANIUM CITY AS A REGIONAL CENTRE

Type of Employment	Number of Adults Employed
Government Services	
Hospital	25
D.T.R.R. Resource Officers	3
Social Services	4
Health Services	1
Economic Development	1
	34
Local and Quasi-Government Services	
Education	2
Municipality	4
R.C.M.P.	2
Airport Management, Road and Airport Maintenance	3
Sask Power and Sask Tel	1
Friendship Centre	3
	15
Commercial	
Air Services	4
General Store	5
Service Station	2
Restaurant	3
Motel	2
Taxi Drivers	2
Tradesmen	2
	20
Other	
Miners (commuting)	4
Priest	1
	5
Total	74

Population Supported by Labour Force (including spouses and children)[1]		141
Adults - retired, seasonally employed or on Social Assistance	70	
Children	35	
Population Supported by Non-Labour Force	105	105
Total Community Population		246

[1] Note: the same assumptions are employed as for the calculations in Table 5.

2. Regional Communities

It is the purpose of this study to determine the location from which services to the residents of the Athabasca region will be provided in the future. There is no suggestion that these services will not be provided. Thus the maximum impact, in this respect, would only be more time consuming and inconvenient delivery systems.

Of considerable importance for this study, however, are two other interrelated considerations. The first arises out of implications for future requirements and demands inherent in the age distribution and selective "consumption" patterns of the regional population.

As indicated previously, approximately one-half the population residing in communities within the Athabasca Region are under fifteen years of age. Each younger age group on the population pyramid for this population is larger than that above it.

What this implies, first, is that, in the absence of out-migration, there will be an increased requirement for elementary school facilities in the next few years.

In the not too distant future, say three to five years, the population of students of high school age will be large enough to warrant one or more high schools in the region. As the people now in these younger age groups begin to leave their parents' homes, there will be an increased requirement for housing, power, sewer and water facilities, etc. Further, a consumption pattern which minimizes the use of electrical power is not likely to persist for long, thus giving rise to an increased requirement for electrical generators and petroleum.

All of this brings up the second consideration, that of transportation. It is virtually certain that the freight transport requirements for resupply, as estimated by Hawryszko, understate the requirements of the region when this impending increase in basic infrastructure and housing is taken into account. However, this increased transport requirement will certainly not be large enough to compensate for the loss of traffic occasioned by the closure of the Beaverlodge Mine. Thus the fixed costs of any future transport system will be spread over a substantially smaller traffic than has been the case to now and, consequently, the unit costs of any future system will likely be substantially higher than at present.

The main point is, however, that with or without a service center in the region, the transport requirements will be greater than has been estimated for resupply and the rate of increase in transport requirements will be fairly rapid over the next several years. In this regard, it may be worth noting that extension of the power line from E.N.L.'s hydro facilities west of Uranium City to the communities in the Athabasca basin, or development of other hydro facilities, would reduce the transport requirements by perhaps one-half since bulk petroleum for North-Sask Electric Ltd. generators constitutes more than half of the anticipated resupply transport requirements.

3. Regional Population Change

An important consideration regarding service centre location is the current and future distribution of the population relative to that centre. In the past, Uranium City dominated the region both in terms of population and of the variety and extent of services provided. This situation has changed dramatically, and further change can be anticipated as Eldorado continues to decrease its employment. While the population of Uranium City

TABLE 7

POPULATION PROJECTIONS

Scenario 1: Uranium City Service Centre	1980	1985	1990	1995	2000	2005
Black Lake	662	789	951	1132	1321	1523
Fond du Lac	517	625	715	833	968	1101
Stony Rapids	235	269	305	340	375	409
Uranium City	2750	250	250	250	250	250
Camsell Portage	60	65	70	80	90	100
Region	4224	1998	2291	2635	3004	3383

Scenario 2: Stony Rapids Service Centre	1980	1085	1990	1995	2000	2005
Black Lake	662	789	951	1132	1321	1523
Fond du Lac	517	655	745	863	998	1131
Stony Rapids	235	419	470	520	575	629
Uranium City	2750	100	100	100	100	100
Camsell Portage	60	65	70	75	80	85
Region	4224	1998	2336	2690	3074	3468

Scenario 3: Southern Service Centre	1980	1985	1990	1995	2000	2005
Black Lake	662	789	951	1132	1321	1523
Fond du Lac	517	655	745	863	998	1131
Stony Rapids	235	269	305	340	375	409
Uranium City	2750	150	100	100	100	100
Camsell Portage	60	65	70	75	80	85
Region	4224	1928	2171	2510	2874	3248

is declining rapidly, the population of the other communities of the region is growing at a high rate, a reflection of high rates of natural increase combined with limited regional out-migration.

Population projections for the communities within the region are illustrated in Table 7. Three scenarios were generated to illustrate the relationships between each of three service centre locations on regional population distribution. Population projections for the communities of Fond du Lac, Black Lake and Stony Rapids were generated using a cohort-survival projection technique incorporating certain assumptions on demographic variables and migration patterns. Further adjustments were made to reflect the return of off-Reserve Band members to Fond du Lac and the impact of the regional service centre location on Stony Rapids. The population of Camsell Portage is more speculative, a reflection of both limited data sources and unpredictability of population movements. The projection for Uranium City assumed an ongoing stabilization of population around the 250 mark.

Several projected trends are of interest. The most significant is the high rate of population growth anticipated for Black Lake and Fond du Lac and, to a lesser extent, Stony Rapids.

For Black Lake, rates of population growth are projected to remain near 4.0 percent annually in the near future, declining to under 3.0 percent towards the end of the century. This high rate of growth will lead to a doubling of population within the next twenty years. The rapid rates of population growth reflect high fertility rates, a large proportion of the female population moving into the childbearing years and a very limited tendency for people to leave their home community. Evidence of

this latter factor is the high proportion of Band population currently living on the Reserve compared to other Indian Bands in Saskatchewan.

The Fond du Lac population displays a lower rate of growth, reflecting lower fertility rates and a more mature age distribution. Nevertheless, annual rates of population change are projected to remain near 3.0 percent in the near future and decline somewhat in later years.

The implications of the high rates of growth in the two larger Chipewyan Indian communities are considerable if present trends continue. The treaty Indian population will comprise an ever-increasing proportion of the regional population, regardless of service centre location (Table 8). For the Uranium City Service Centre Scenario, the on-Reserve Treaty Indian population in 1980 was twenty-eight percent of regional population. With the closure of the mine and the departure of most Uranium City residents, the percentage of on-Reserve Treaty Indians will rise to seventy percent by 1985 and to eighty percent by the year 2005. At that time the regional on-Reserve treaty population will exceed 2500 persons. These figures slightly understate the total Treaty Indian population in the region, in that those Treaty Indians living in regional communities such as Stony Rapids or on Crown lands are not included.

The number of children of school age will increase dramatically as well. To meet the expanding school age population will require an expansion both of facilities and of educational programs. A considerable portion of the school population will be of high school age. Development of a high school or high schools in the region would avoid students' having to "go south" for high school and thereby encourage them to achieve a higher level of education. To illustrate these points, projections of student population are shown in Table 10.

TABLE 8

ON-RESERVE TREATY INDIAN POPULATION
AS PROPORTION OF REGIONAL POPULATION
WITH URANIUM CITY AS REGIONAL SERVICE CENTRE

	On-Reserve Treaty Population		Other Population		Total
	Nos.	%	Nos.	%	
1980	1179	27.9	3045	72.1	4224
1985	1414	70.8	584	29.2	1998
1990	1666	72.7	625	27.3	2291
1995	1965	74.6	670	25.4	2635
2000	2289	76.2	715	23.8	3004
2005	2624	81.1	759	23.4	3383

TABLE 9

FUTURE GEOGRAPHICAL POPULATION DISTRIBUTION
WITH URANIUM CITY AS REGIONAL SERVICE CENTRES

	Uranium City/ Camsell		Fond du Lac		Stony Rapids/ Black Lake		Total
	No.	%	No.	%	No.	%	
1980	2810	66.5	517	12.2	897	21.2	4224
1985	315	15.8	625	31.3	1058	53.0	1998
1990	320	14.0	715	31.2	1256	54.8	2291
1995	330	12.5	833	31.6	1472	55.9	2635
2000	340	11.3	968	32.2	1696	56.5	3004
2005	350	10.8	1101	33.9	1932	59.5	3383

TABLE 10

PROJECTIONS OF SCHOOL AGE POPULATION

Community	1980	1985	1990	1995	2000	2005
School Age Population	606	647	697	825	994	1150
Total Population - Stony Rapids, Fond du Lac and Black Lake	1414	1634	1917	2245	2599	2963

4. Social Considerations

It was felt that the best way to assess the social implications of potential service centre locations, given time, methological and data limitations, was to let the people speak for themselves. This avoids the possibility of social values being imposed on regional and local situations by outsiders. Consequently this section attempts to present those views which were conveyed to the consultants by community representatives during visits to the communities in December of 1982 and February of 1983.

Numerous individuals spoke of the potential and actual negative impacts resulting from the decline of Uranium City and a subsequent decline in the level and quality of services provided, notably health and medical services. A term occasionally encountered was that the Uranium City Hospital had become no more than a "glorified nursing station" since mine closure. At meetings with community representatives at Stony Rapids, Black Lake, Fond du Lac and Camsell Portage, there was considerable dissatisfaction expressed in three specific areas as follows:

1. Adequacy of Doctor's Visits to Communities

   In Black Lake, Stony Rapids and Fond du Lac there were complaints about the large number of patients examined by a doctor within a short period of time, and the consequent limited examination time. The view was expressed that the medical evaluation would be very inadequate.

2. Maternity Referrals to Southern Hospitals

   With the withdrawal of two doctors from Uranium City, maternity cases have been referred to La Ronge, Prince Albert or Saskatoon. This imposes both a financial cost and a social cost in terms of disruption of the family unit. A considerable time is spent away from home by the mother and in some cases by the father. Problems of adjusting to an urban environment are compounded for those whose language is not English.

3. Emergency Care

Concern was expressed regarding the time required to transport emergency cases to hospital, especially those resulting from injury or illness while on the trapline or otherwise away from settled areas.

A number of individuals expressed a strong preference for the retention of the service centre (i.e., hospital and medical services) within the region, as opposed to a southern location. A certain number expressed a second preference for having the hospital located in their own community, but appeared to feel that Uranium City would be an acceptable location, assuming the availability of a full range of medical and health services. However, in the case of Black Lake, a strong impression was received at a meeting with the Stony Rapids Band Council that a local location (Stony Rapids or Black Lake) would be preferable to either a Uranium City or southern location and that retention of Uranium City Hospital would not meet the needs of the Band members.

The notion of improved medical and health services in the Stony Rapids area was strongly supported by representatives of the Stony Rapids community. Outside parties as well, specifically the Department of Indian Affairs and Northern Development also have pointed out the desirability of a Stony Rapids/Black Lake area centre for delivery of medical and health care and for educational and economic programs in terms of benefits to the Treaty Indian population.

Contrasting views were presented by residents of the western portion of the region. The community of Camsell Portage expressed a strong position through its LAC (Local Advisory Council), supporting the retention of Uranium City as the regional service centre, as Camsell Portage has been dependent

on Uranium City for a wide array of services, including medical, health, commercial, communications and transportation services.

In discussing the possibility of their community being selected as the regional centre, residents identified the positive effects of such an event in both economic and social terms. Economic benefits which were mentioned were increased employment opportunities, greater economic viability, better air service, improved surface transportation and others. All of these, of course, have social implications. Social benefits which were mentioned included increased educational opportunities, improved medical and health care and accessibility to a wider range of goods and services. In the case of Stony Rapids, the possibility of achieving a threshold population to support a high school was cited as a potential positive impact. The two Bands as well, are very conscious of the lack of high school opportunities in the Athabasca region. Service centre designation would have the benefit of facilitating the development of improved educational opportunities.

Negative effects of service centre designation were mentioned at Stony Rapids. Greater accessibility to liquor and disruption of community life were cited as potential negative effects of the growth which would come from service centre designation. Hence the relocation of the liquor store from Uranium City may be met with opposition by some.

In conclusion a number of individuals in all communities expressed a strong preference for the retention of the service centre within the region. Some residents of some communities stated a preference for the selection of their community. This preference was most strongly stated by the Stony Rapids Band (Black Lake) for a centre in the Fond du Lac/Stony Rapids/Black Lake sub-region.

III. COST BENEFIT ANALYSIS OF ALTERNATIVE SERVICE CENTER LOCATIONS

A. Methodology

The cost-benefit technique is a tool of analysis developed to facilitate determination of the economic desirability of public or private initiatives involving the commitment of funds in anticipation of a return in excess of the outlays.

As used by a Crown Corporation or a private firm to evaluate a specific proposal, the cost-benefit evaluation would establish whether the present value of anticipated net revenues would exceed the present value of anticipated present and future costs, i.e., whether:

$$\sum_{n} \frac{Rn}{(1+i)^n} > \sum_{n} \frac{Cn}{(1+i)^n}$$

where n refers to the life of the investment and i is an appropriate discount rate. The "benefit-cost ratio" is obtained by dividing the left hand term by the right hand term. This basic calculation by itself does not determine whether the specific proposal under evaluation represents the optimum method of obtaining the benefits in question however. To determine the optimum requires evaluation and comparison of the alternatives.

For some types of evaluations it is necessary to determine the absolute value of both costs and benefits explicitly. In other cases incremental values are sufficient and in still other uses, perhaps the majority of cases involving government expenditures, costs alone, whether absolute or incremental, are all that are required.

Fortunately the latter is true in the case at hand. The terms of reference for this study require that the alternative means for providing the same level of services to the residents of the Athabasca Region, as enjoyed while they were provided out of Uranium City, be determined and evaluated in terms of cost efficiency.*

One other point worth mentioning has to do with prices and discount rates. Since some of the costs being estimated occur at different points in time, the question naturally arises as to which prices, today's or tomorrow's, are appropriate.

If we identify todays cost of some item as C, then its cost next year can be stated as $C(1 + p^e)$, that is, today's price multiplied by one plus the price increase expected between now and then.

Similarly, the rate at which government (or anyone) borrows money today reflects the lender's desire to obtain a "real" return over the anticipated rate of inflation during the duration of the loan. Thus the former, the "real" rate $(1 + i)$ is multiplied by the anticipated rate of inflation $(1 + p^e)$ to obtain the "nominal" or market rate of interest. The nominal rate can therefore be stated as $(1 + i)(1 + p^e)$.

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* Formally in this case the net benefit of selecting one alternative over the other is identified as the cost difference between the alternatives, i.e., $z = (B_1 - C_1) - (B_2 - C_2)$. Thus when $B_1 = B_2$, rearrangement gives $z = (B_1 - B_2) - (C_1 - C_2)$. The term containing the B's drops out and only the costs need be considered. For an expanded discussion on this aspect of cost-benefit analysis see Peter O. Steiner, "The Role of Alternative Cost in Project Design and Selection". Quarterly Journal of Economics, Vol. 79, No. 3, August 1965: pp. 416-430.

The analyst could attempt to forecast the rate of inflation by which to adjust today's prices for future years and attempt also to forecast the rate of interest that will prevail in the future. But, as interest rates adjust to inflation in any case, this would amount to using today's prices for all future dates and discounting by an interest rate that has been adjusted to remove the inflationary component, i.e.:

$$\frac{C(1 + p^e)}{(1 + i)(1 + p^e)} = \frac{C}{(1 + i)}$$

Thus all of the prices used in the cost-benefit analysis will be stated in 1982-83 dollars and discounted to present value by a real interest rate.

B. Threshold Considerations for Service Center Selection

Several regional functions provided from Uranium City were identified above. Each of the following activities or services were extended to all or part of the region from Uranium City: social services; banking, financial services, insurance and legal services; policing - R.C.M.P.; enforcement of acts relating to use and harvest of natural resources - Resource Officers; radio-communications services; liquor board outlet; doctor and hospitalization services.

Each of the services or functions mentioned, with the exception of the hospital, have the common characteristic of being "divisible", i.e., they are capable of being scaled up or down as demand requires without much loss of efficiency. Thus an R.C.M.P. detachment or a Social Services office could be efficiently operated at a scale of two persons each or ten persons each, depending on requirements, and achieve approximately the same efficiency per member. That is, there is some, but

probably not much, complementarity or economies of scale that would make the larger unit considerably more efficient than the smaller.

The same is not the case for a hospital, which appears to have a minimum efficient threshold below which efficiency declines rapidly. For example, hospital facilities in combination with a single doctor provide something by way of health care that is better than a good nursing station but something that is considerably inferior to what the same facilities could provide with a second doctor/anesthesiologist. In fact, to make it efficient to have a hospital in a remote location, the doctor and doctor/anesthesiologist should be complemented with fairly sophisticated laboratory and x-ray facilities with appropriate supporting staff. In the absence of the full package, dependency on the outside increases rapidly, patients are sent elsewhere and costs increase. On the basis of provincial averages, the Athabasca region would just about qualify for such a package.

What is true of the parts may not extend entirely to the whole, however. While many of the services provided out of Uranium City appear quite divisible, it is probably true that there are some joint economies or complementarities associated with keeping the whole package together, especially if the service centre is retained in the north. The opportunity for social interaction with other professionals probably means a lower turn-over rate. Further it is probably less expensive to provide infrastructure and continuing support for a group in one location as opposed to individuals or small groups in scattered locations. In addition, the larger group might be expected to provide sufficient market potential to retain some commercial activities - bank, store, liquor board outlet, etc., that could not exist if they were scattered.

C. Feasible Locations for a Service Center

Uranium City obviously must be considered as one of the possible locations. All of the infrastructure required for a northern service center is already in place. Thus little, if any, expenditure on new capital facilities would be required to prepare Uranium City to continue in the role of regional service center. Further there would be no interruption of services as there will be if another alternative is selected. It has two main drawbacks, however. First its location is 100 miles or so from the center of gravity of the regional population. Thus most patients requiring hospitalization would have to travel by air to Uranium City. The second drawback is that Uranium City would require some scaling down to accommodate its diminished population. Although scaling down does not represent much of a technical challenge or expense for the required technical changes, the ownership pattern and desirable usage pattern might present some difficulties. Thus Uranium City would be characterized by low initial costs but higher operating costs.

Probably the only other feasible alternative location for a regional service center in the north is at Stony Rapids. Its advantages include a location near the center of the regional population which would reduce the number of patients requiring air transportation for hospitalization. It is the only existing community of any size in the region that is located off Reserve land.

Stony's major drawback compared with Uranium City is that it has none of the required capital facilities and its infrastructure is inadequate. Thus, compared with Uranium City, Stony Rapids would be characterized by high initial costs for capital and infrastructure and lower operating costs. If Stony

Rapids were selected as a regional center, the question has to be answered as to where the services would be provided from in the two or three years it took to prepare Stony for this role.

A final alternative would be to abandon the notion of a northern service center and provide most regional services from La Ronge or possibly even Saskatoon. While all the services could probably be provided out of La Ronge, selection of Saskatoon would likely mean a split delivery system. Medical services alone would probably be provided out of Saskatoon with everything else provided out of La Ronge.

D. Analysis of Alternatives

Table 11 identifies the functions or activities that must be considered for each potential service centre location. It should be noted that in analysis of each of the alternatives, costs that have already been incurred as a consequence of the closure of the mine, or will be incurred regardless of which alternative is chosen, are excluded from consideration. For example many of the public buildings in Uranium City have not been fully depreciated. In other cases the province has signed leases for buildings that it must continue to honour, etc. The point to note about items like this is that whatever repayments or costs the province will incur they will be the same - unchanged - regardless of which community is selected as a service centre. We could therefore include these costs under each of the options as they will be incurred regardless of what is done. But a constant added to each of the options will not influence the outcome. It is therefore appropriate to ignore them totally. Thus cost of public buildings in Uranium City is zero (unless modifications that would not be undertaken otherwise are required to prepare them for a continuing role). Annual costs must be included, however.

TABLE 11

COSTS OF ALTERNATIVE SERVICE CENTRE LOCATIONS

		Cost Incurred Because U. C. Remains a Centre With About 100 Population		Alternative Service Centre Locations									
				Uranium City I[1]		Uranium City II[2]		Stony Rapids		La Ronge		Saskatoon	
		Capital	Annual	Capital	Annual	Capital	Annual	Capital	Annual	Capital	Annual	Capital	Annual
A.	Public Buildings	--	--	--	123,000	--	123,000	3,165,000	103,000	2,172,000	95,000	2,172,000	95,000
B_1	Health Facilities	75,000	17,000	--	1,022,000	--	1,005,000	5,100,000	929,000	2,946,000	536,000	2,670,000	536,000
B_2	Hospital Staff Housing	--	1,800	--	21,000	--	19,200	444,000	21,000	--	--		--
C_1	Education	25,000	76,000	25,000	203,000	--	127,000	400,000	212,000	280,000	125,000	280,000	125,000
C_2	Teachers Residence	--	1,800	--	3,500	--	1,700	74,000	3,500	200,000	--	200,000	--
D_1	Public Housing Program	--	19,000	--	35,000	--	16,000	666,000	34,000	1,275,000	28,000	1,275,000	28,000
D_2	Staff Housing	--	8,000	--	38,000	--	30,000	489,000	28,000	--	--	--	--
E.	Airport	10,000	15,000	10,000	100,000	--	85,000	1,375,000	158,000	668,000	55,000	668,000	--
F_1	Municipal Engineering	336,000	90,000	336,000	90,000	--	--	1,000,000	25,000	--	--	--	--
F_2	Municipal Operations	--	100,000	--	272,000	--	172,000	--	40,000	--	--	--	--
G.	Prov. Gov't Staff:												
	- Expenses												
	Resources	--	--	--	--	--	--	13,000	25,000	32,000	75,000	32,000	75,000
	Health Services	--	--	--	--	--	--	--	--	--	--	--	--
	Extension Services	--	--	--	--	--	--	32,000	--	32,000	--	32,000	75,000
	Northern Cont. Ed.	--	--	--	--	--	--	--	--	--	--	--	--
	Social Services	--	--	--	--	--	--	--	--	--	46,000	--	46,000
	Economic Development	--	--	--	--	--	--	--	--	--	10,000	--	10,000
H.	Patient Travel Costs	--	7,000	--	59,000	--	52,000	--	28,000	--	266,000	--	427,000
J.	Doctors Travel Costs	--	14,400	--	22,000	--	7,600	--	22,000	--	56,000	--	56,000
K.	Basic Transport	--	44,000	--	430,000	--	386,000	--	430,000	--	--		
L.	Power	--	--	--	--	--	--	--	--	--	--	--	--
M.	Food Transport Subsidy	--	22,400	--	50,400	--	28,000	--	34,000	--	--	--	--
	Totals	446,000	415,400	371,000	2,468,900	--	2,052,500	12,758,000	2,092,500	7,605,000	1,292,000	7,329,000	1,398,000

[1] Uranium City I: Uranium City as a regional centre with a population of 250.

[2] Uranium City II: Incremental cost between Uranium City as a regional centre (Uranium City I) and Uranium City as a centre of one hundred population (second column minus the first column).

Before analyzing the cost of the alternatives mentioned, i.e., complete service centres at Uranium City, Stony Rapids or La Ronge or a split system involving Saskatoon and La Ronge, it is necessary to identify the costs that will be incurred if Uranium City continues to exist as a community of approximately 100 people. These costs are not part of the costs associated with the selection of a service centre because they will be incurred regardless of what is done about providing services to the people of the Athabasca Region. However, these costs do enter into one of the scenarios in the following way. The costs incurred in continuing with Uranium City as the service centre are only those that would be incurred over and above those associated with Uranium City remaining as a small centre with a population of 100 or so.

In Table 12 the capital and annual costs identified for each option are presented in terms of net present values. It is thus possible to compare the present values of all eventual costs for each alternative in this manner. Three real rates of discount are used and comparisons are made over five, ten and twenty-five year time horizons.

The figures in Table 12 indicate that because the capital facilities are already in place, Uranium City is the least-cost alternative for providing services to the residents of the Athabasca region in the short to medium term future. However, because of higher annual costs, this advantage diminishes with the passage of time. With a ten year time horizon, Uranium City's advantage over La Ronge or Saskatoon, in strictly cost terms, is minimal. With a twenty-five year time horizon, both La Ronge and Saskatoon have somewhat lower overall costs.

It should be further noted that these comparisons are not sensitive to variations in the rates of discount used.

TABLE 12

NET PRESENT VALUE OF COSTS OF ALTERNATIVE SERVICE CENTRE LOCATIONS

NET PRESENT VALUES - CAPITAL AND ANNUAL COSTS (THOUSANDS OF 1982 DOLLARS)

Centre	5 Year Time Horizon			10 Year Time Horizon			25 Year Time Horizon		
	Capital	Annual	Total	Capital	Annual	Total	Capital	Annual	Total
UC 100									
at 5% Real Rate	405	1,803	2,207	405	3,215	3,620	405	5,869	6,273
6% Real Rate	397	1,754	2,151	397	3,065	3,462	397	5,323	5,720
7% Real Rate	390	1,707	2,097	390	2,925	3,314	390	4,853	5,242
UC I									
at 5% Real Rate	337	10,689	11,026	337	19,064	19,401	337	34,797	35,133
6% Real Rate	330	10,400	10,730	330	18,171	18,502	330	31,561	31,891
7% Real Rate	324	10,123	10,447	324	17,341	17,665	324	28,772	29,096
UC II									
at 5% Real Rate	0	8,886	8,886	0	15,849	15,849	0	28,928	28,928
6% Real Rate	0	8,646	8,646	0	15,107	15,107	0	26,238	26,238
7% Real Rate	0	8,416	8,416	0	14,416	14,416	0	23,919	23,919
Stony Rapids									
at 5% Real Rate	11,572	9,059	20,631	11,572	16,158	27,730	11,572	29,492	41,063
6% Real Rate	11,355	8,814	20,169	11,355	15,401	26,756	11,355	26,749	38,104
7% Real Rate	11,143	8,580	19,723	11,143	14,697	25,840	11,143	24,385	35,528
La Ronge									
at 5% Real Rate	6,898	5,594	12,492	6,898	9,976	16,874	6,898	18,209	25,107
6% Real Rate	6,768	5,442	12,211	6,768	9,509	16,278	6,768	16,516	23,285
7% Real Rate	6,643	5,297	11,940	6,643	9,074	15,717	6,643	15,056	21,699
Saskatoon									
at 5% Real Rate	6,648	6,053	12,700	6,648	10,795	17,443	6,648	19,703	26,351
6% Real Rate	6,523	5,889	12,412	6,523	10,289	16,812	6,523	17,871	24,394
7% Real Rate	6,401	5,732	12,134	6,401	9,819	16,220	6,401	16,292	22,693

* These calculations are made on the assumption that no capital expenditures are made until 1984. Public Buildings, Health Facilities, Schools and Airport construction are assumed to take two years to complete, all other construction one year. Present values are calculated from the end of the year in which the expenditure occurs.

CONCLUSION

From the preceding discussion, it is evident that for the short to mid-term, it is most economical to retain Uranium City as the Regional Services Centre for the Athabasca Region. While the cost/benefit analysis concludes that it would be desirable to develop another option some time after the five year time horizon, that conclusion will have to be weighed in association with other economic, social and political factors that exist in the Region and the Province as a whole at that time.

IV. REGIONAL CONSIDERATIONS

A number of concerns were raised by various individuals and groups in consultation with the Study Team in the early stages of the Study. While many of these issues were beyond the scope of this project, they are, nevertheless, critical to the people of the Athabasca Region and should be identified for further consideration. The following are among the most significant of the regional issues.

1. Transportation: Inasmuch as a growing number of people will continue to live in this Region, it will be necessary to maintain effective transportation linkages to and from the area. The remoteness of the area and the decreased viability of the NTCL barge system, because of drastically decreased demand, calls for a new approach to the movement of people and goods to and from the region. A rapidly growing population will generate requirements for community infrastructure - housing, schools, etc. - the components of which, by and large, must be imported.

2. Economic Development: A rapidly expanding population will require meaningful employment opportunities to augment traditional resource harvesting activities which can support only a limited population. Further evaluation of various economic development opportunities including renewable and non-renewable resources and the service sector, as well as policies affecting the viability of such opportunities is warranted. An evident regional concern has been that permanent residents participate fully in the employment generated by the delivery of services to regional residents. Both transportation systems and educational programs must be in place to facilitate economic development.

3. Energy: Electrical energy is generated from two basic sources in the Region - E.N.L. hydro facilities at Uranium City and diesel-electric generators at Fond du Lac, Stony Rapids and Camsell Portage. Given the substantial excess capacity, but remote location of ENL's facilities, and the increasingly high cost of importing diesel fuel, a number of options warrant consideration. These include the extension of hydro power from Uranium City to other regional communities and possibly on to Rabbit Lake, the development of diesel generating facilities for Uranium City, the consolidation of diesel generating facilities for Fond du Lac, Stony Rapids and Black Lake, including a power linkage between Fond du Lac and Stony Rapids, and the development of alternative low-head hydro facilities. Alternate approaches which could lessen dependence on conventional sources for both heating and power need to be explored more fully.

4. Education: As the population of the Region grows along with the need to acquire skills to participate in the labour force, need for effective secondary and vocational educational programs will accelerate. Given the low rate of success of students going outside the region for high school, it seems appropriate to develop some delivery system within the Region, whether on a regional or local basis. Questions as to needs, curriculum, location, staffing and facilities need to be addressed and resolved. Certainly the role of education in facilitating economic and social development cannot be over-emphasized.

5. Health Care: This Study has identified a need to define a long term approach to medical and health care in the region which recognizes the unique circumstances of the region

with respect to location, demographic factors, climatic severity and federal/provincial responsibilities. In the long run, there is scope for innovative approaches to solving health care problems. Optional approaches must recognize the special circumstances of the region with regard to location, climate and demographic changes.

These and other issues require further consideration could be dealt with on a comprehensive basis through the preparation of a regional development strategy.

V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

While exploration of the Uranium City area had become quite active by the mid-1940s, the Municipal Corporation of Uranium City did not come into being until 1953, coincident with plans for production at Beaverlodge. With good market conditions, production capacity was increased in the mid-1950s, bringing the Uranium City population to a peak in 1958. This was followed by a bit of a depression in the mid-1960s and a secondary boom and growth in the late 1960s. Again, this was followed by a depression and declining growth into the early 1970s. Although plans were announced in 1974 for a significant expansion, this never occurred because of competitive developments in other areas of northern Saskatchewan.

The dominance of Uranium City in this part of the Province for nearly three decades brought with it development that caused or enabled it to become the Regional Service Centre for the Athabasca Region. The primary developments in this respect include the hospital and the Provincial Government Building, including a number of resource services and social services for the people of the Region.

The announcement by Eldorado Nuclear Limited on December 3, 1981, to terminate the operation of its Beaverlodge Uranium Mine and Mill facilities effective June 30, 1982, raised questions as to the future function of the community. The shut-down of the mine resulted in a sudden decline in population from 3,000 to about 800 shortly after the official shut-down occurred. There will be a further significant reduction as stability is achieved.

Stability may be achieved at one of three possible levels. The most optimistic option would be for Uranium City to continue in its present function as the Regional Service Centre. Second, Uranium City may survive as a small community without regional services. Third, Uranium City may cease to exist altogether.

The existence of these options called for the investigation of this study. The objectives of this phase of the study were:

1. to define the complete range of services provided from Uranium City, including the federal, provincial, municipal and private sectors;

2. to assess the demand for the continuation of such services in consideration of the projected declining population in Uranium City and the service needs of remaining community and regional residents; and

3. to assess the most appropriate location(s) and means for providing regional services, either from Uranium City, from another existing community within the region, or from some other supply centres, taking into consideration a cost-benefit analysis.

The range of services provided from within Uranium City may be generally categorized as Government services, local and quasi-government services, commercial services and others. Government services include those related to the hospital, D.T.R.R. Resource Officers, Social Services, Health Services and Economic Development. Local and quasi-government services include education, municipal services, R.C.M.P., Airport services, highway and airport maintenance, power, telephone and Liquor Board services. Commercial services from the private

sector include air services, retail merchandising, banking, service stations, restaurant, taxis and some tradesmen. The "other" category includes religious services.

Through a detailed assessment of the needs and wants of the people in the Region, it was determined that this full range of services will be required even though Uranium City's population is declining significantly. This conclusion presents a variety of options, as indicated in the third study objective, for further detailed analysis. Two factors are particularly critical in such decision-making, namely economic and social costs and benefits.

The economic cost-benefit analysis was based on comparative incremental costs that would be incurred as a result of the delivery of the identified regional services from various communities within and outside the region.

The prospective centres within the region include: 1) Uranium City because it is the existing Regional Centre and because the necessary infrastructure for the delivery of those services is essentially in place; and 2) Stony Rapids because it is an established community near the centre of gravity of the regional population. The communities outside the Region that were considered prospective dissemination points for Regional Services include: 1) La Ronge, based on the fact that it has functioned as the government services centre for northern Saskatchewan; 2) Prince Albert because it is the nearest centre for specialized hospital services and a broad range of commercial services; and 3) Saskatoon because it offers a full range of both hospital and commercial services.

In establishing an analytical framework for the economic cost-benefit analysis, it was recognized that the most significant economic element in the analysis was that of cost. In these respects, the incremental costs - that is, the costs over and above those that would be incurred not including the delivery of Regional Services, if the community were to be developed with Regional Services delivery capabilities - were broken down between capital and annual operating categories and presented for the full range of services for each respective community. It should be noted that figures are excluded for Prince Albert because its situation would be a duplication of the Saskatoon situation. In each of these cases it is assumed that a split-delivery system would develop. While hospital and some commercial services would be provided from Prince Albert or Saskatoon as the Regional Service Centre, most other services would be disseminated out of La Ronge in this scenario.

The conclusion of the economic cost-benefit analysis is that Uranium City should be retained as the Regional Service Centre. This conclusion is based on the fact that there is in the order of a $10 million capital cost differential between this option and any of the other options. This stems from the fact that the capital facilities that are required for the delivery of Regional Services are already in place in Uranium City.

This conclusion satisfies the wishes of regional residents inasmuch as they would generally rather have services provided from within the Region than from a Centre without. Nevertheless, there was a strong second preference for services as close as possible to the centre of population. This opinion was expressed most clearly by the Stony Rapids Band, the largest community in the region. The opinion was that medical and health services were not being provided effectively from

Uranium City either in the past or the present. However, the delivery of services from beyond the region was felt to be the least desirable option.

On the other hand, Camsell Portage residents stated categorically that they are totally dependent on Uranium City for local and regional goods and services and consequently withdrawal of these would severely disadvantage the community.

To balance economic and social considerations, as infrastructure is in place in Uranium City, and as the provincial Department of Health is committed to maintaining an acceptable level of hospital services in the Athabasca Region, it is concluded that Uranium City should be retained as the Regional Service Centre for the life cycle of the hospital and as long as the effectiveness of the service is maintained to regional communities. An interim assessment period to test the effectiveness of these services is recommended.

The decision to retain Uranium City as the Regional Service Centre requires that a Development Plan be prepared for the rationalization and consolidation of that community. The Plan is presented in Phase II of this Study.

APPENDIX A

DERIVATION OF COST/BENEFIT DATA

1. Costs Incurred because Uranium City remains a Centre with Approximately 100 Inhabitants

A. Public Buildings: No new public buildings are required.

B_1 Health Facilities: A 250 m^2 clinic would be developed at a capital cost of $75,000. Annual operating costs would equal $17,040.

B_2 Staff Housing: Available at $1,800 per year.

C_1 Education: Ben McIntyre School or other existing building would be operated. A $25,000 additional capital cost would be associated with alterations to Ben McIntyre or to other structure. Annual operating cost would equal $76,000, assuming fifteen students.

C_2 Teachers' Residence: Available at $1,800 per year.

D_1 Public Housing: It is assumed that fifteen units would be retained in Uranium City and that no capital costs would be required. Annual subsidy would equal $19,000.

D_2 Staff Housing: It is assumed that five provincial government employees would remain in Uranium City. Houses are available at no additional cost. Annual subsidy is estimated at $8,000/year.

E. Airports: It is assumed that the Ministry of Transport employees will leave. Capital costs to continue the airport at the minimum acceptable level of service are estimated at $10,000 for modifications to the servicing system. Annual operating costs are estimated at $15,000.

F_1 Municipal Engineering: Down-sizing to the smallest feasible alternative is assumed. Capital costs for downsizing would equal $336,000. Operating costs would equal $90,000 per year, a portion of which could be offset by utility revenues.

F_2 Municipal Operations: Operational costs of running a municipality of 100 people in addition to sewer and water costs are estimated at $100,000, including administration, transportation, recreational and other services. These costs would be offset to some extent by revenues from unconditional grants, grants in lieu of taxes.

G. Provincial Government Staff Expenses: Only are identified under this category since it is assumed that, unless explicitly noted otherwise, provincial government employment will remain unchanged from what it is at present. It is only a question of where the employees will be situated. Thus only differences in expenses will alter with location.

Resources - no increase in costs.

Health Services - one nurse present - no increase in costs.

Extension Services - assumed to leave Uranium City.

Northern Continuing Education - assumed to leave Uranium City.

Social Services - No additional expenses.

H. Patient Travel Costs: The cost of Uranium City residents travelling to hospital is included under the costs associated with each service centre alternative. Travel is assumed to be fifty percent by scheduled airline and fifty percent by chartered aircraft.

J. Doctors' Travel Costs: The cost of a doctor making periodic visits to Uranium City is included under the costs associated with each service centre alternative. Travel is assumed to be by chartered aircraft.

K. Basic Transport: The transport system in the future will likely be more expensive than the old one. The additional costs of serving the region are calculated as follows:

i) the costs of serving the region with the new system are estimated. (These costs do not form part of the cost-benefit analysis, however, only ii) below does.)
ii) the increase in the basic transport costs imposed on the system by choosing a service centre within the region are estimated.

Thus, the increased cost of serving Uranium City at a population of 100 is estimated to be $44,000 per year. This is calculated on the basis of the most expensive of the possible alternatives to the present system outlined in a memo from Andy Horosko to Dewell Linn, dated December 23, 1982. From this is subtracted the estimated cost of serving Uranium City with a population of 100 under the present transport system, i.e., $28,000. The difference is $44,000. These costs are based on an assumed volume of cargo equal to four times Camsell Portage's recent requirements.

L. Power: It is assumed that hydro power will continue to be supplied through North-Sask Electric, ENL's hydroelectric plants. Thus no change in costs is anticipated.

M. Food Transport Subsidy: Uranium City has not received the subsidy in the past but is likely to in the future. The annual cost is estimated at $22,400.

2. Costs Associated with Provision of Services from Uranium City, Stony Rapids or La Ronge

The costs listed for Uranium City below (and on Table 8 under Uranium City I) are the costs that would be incurred if it were decided now to prepare Uranium City to continue as the regional service centre. The difference between these costs and those associated with maintaining Uranium City as a centre with a population of approximately 100 people are the costs attributed to retaining Uranium City as the service centre. These are listed under Uranium City II.

A. Public Buildings

Uranium City: No new public buildings would be required. Annual costs would equal $123,370.

Stony Rapids: It is assumed that a new public office building would be required at eighty percent of the size of the present Uranium City facility. The capital cost would be $3,165,000 (1448 m^2 x 2185/m^2). Annual costs would equal $102,808.

La Ronge: Assumes an addition of 1448 m^2 required to La Ronge Provincial Office Building at a cost of $2,172,000 (1448 m^2 x $1500/$m^2$). Annual cost of operating the addition would be $94,583.

B_1 Health Facilities

Uranium City: The hospital would be retained at its present size. Operating costs would equal $1,022,000 per year.

Stony: A new twenty bed facility is assumed to be required at a cost of $255,000 per bed or $5,100,000. Annual costs would equal $929,000 a year.

La Ronge: Assumes a twenty bed addition to the La Ronge Hospital at a cost of $2,946,000. Increased annual costs would equal $536,000.

B_2 Hospital Staff Housing

Uranium City: Housing is available. The staff housing subsidy would equal $21,000 per year.

Stony: It is assumed that twelve houses would be moved from Uranium City at $37,000/unit equal $444,000. The housing subsidy would equal $21,000 per year.

La Ronge: Neither housing or subsidy is required.

C_1 Education

Uranium City: The cost of adapting either Ben McIntyre School or to accommodate up to 40 students is assumed to be $25,000. The annual operating costs would equal $203,000.

Stony: It is assumed that the present school would need to be expanded by two classrooms at a cost of $400,000 (160 m^2 x $2500 m^2). Annual incremental operating costs would be $212,000.

La Ronge: It is assumed that expansion would be required at La Ronge of two classrooms at a cost of $280,000 (160 m^2 x $1750 m^2). Annual incremental operating costs would be $125,000.

C_2 Teacher Residence

Uranium City: Residences are available. Annual housing subsidy for two teachers is estimated at $3500.

Stony: Assumed move of two houses at $37,000 each would equal $74,000. Housing subsidy would equal $10,800.

La Ronge: It is assumed that two new teacherage units would be constructed at a cost of $200,000.

D_1 Public Housing Program

There are forty-two so-called Section 40 subsidized housing units and eight senior citizens houses in Uranium City. The following figures assume:

a) that twenty-one remain in Uranium City if it is continued as the service centre;
b) that ten units plus eight senior citizens houses move to Stony if Uranium City continues to exist but is not the service centre;

c) that fifteen units must be built elsewhere in the Northern Administration District if La Ronge or Saskatoon is chosen as the service centre. Thus:

Uranium City: No capital cost are required. Annual housing subsidy would be $35,000 per year.

Stony: The capital costs involve moving eighteen units at $37,000 per unit for a total cost of $666,000. The annual subsidy would be $34,000 per year.

La Ronge: The capital costs of fifteen new units elsewhere in the Northern Administration District at $85,000 per unit would be $2,465,000. The annual subsidy would be $28,000 per year.

D_2 Staff Housing

Uranium City: Houses are available. Annual subsidy = $37,558.

Stony: Assumes moving twelve houses at $37,000 each and 6 mobile homes at $7,500 each from Uranium City to Stony Rapids. Total capital cost would be $489,000, with an annual subsidy of $28,000 per year.

La Ronge: No housing or subsidy required.

E. Airport

Uranium City: Capital costs would equal $10,000. It is assumed that the Uranium City Airport would be operated by the province at a cost of $100,000 per year.

Stony: Capital cost of moving Stony air strip is estimated at $1.375 million. Annual operating cost would be $158,000.

La Ronge: If La Ronge is chosen, it is assumed that the Stony Rapids Airport would have to be up-graded at a cost of $668,000. The increase in annual costs would be $55,000.

F_1 Municipal Engineering

Uranium City: Given an assumed population of 250 people, capital cost for down-sizing would be $335,000 with an annual operating cost of $90,000.

Stony: For the purposes of the analysis, it is assumed that Stony Rapids receives a full water and sewer system regardless of service centre designation by 1985. Consequently the costs of providing full services to the community cannot be attributed to regional centre designation. However, the incremental costs of accommodating an additional 150 people are estimated at $1,000,000, of which $800,000 is attributed to development costs of new housing areas (forty lots at $20,000 per lot) and $200,000 is attributable to extra reservoir and lagoon capacity.

F_2 Municipal Operations

Uranium City: Operational costs of the municipality, exclusive of water and sewer operations are estimated at $272,000.

Stony Rapids: Incremental municipal operational costs are estimated at $40,000. No capital outlay outside of sewer and water services.

La Ronge: No operational costs are anticipated.

G. Provincial Government Staff Expense: Only expenses are identified under this category since it is assumed that, unless explicitly noted otherwise, provincial government employment will remain unchanged from what it is at present. It is only a question of where the employees will be situated, thus only differences in expenses will alter with location.

Resources

Uranium City: No change from present.

*Stony: $13,000 capital cost, $25,000 additional annual cost.

*La Ronge: $32,000 capital cost, $75,000 additional annual cost.

*If Resources is compelled to move from Uranium City. If allowed to remain in Uranium City, there would be no change in costs and no costs for Stony or La Ronge.

Health Services

Uranium City: There would be no increase in costs.

Extension Services

There is a radio communications station in both Uranium City and Stony. Annual costs are $27,000 each.

Assumptions

Uranium City: If Uranium City is selected as the regional centre, Stony would be closed. If Stony is selected, Uranium City would be closed. Thus operating cost of either option is the same, that is, no change. However, if Uranium City is not selected, radio equipment will be moved to Stony at a capital cost of $32,000.

Thus for Uranium City no capital cost and no increase in annual costs is anticipated.

Stony: Capital costs are $32,000. Operating costs would be unchanged.

La Ronge: The service is not capable of being provided out of La Ronge. Thus by selecting La Ronge the cost is that of maintaining the service in the region, presumably at Stony Rapids, involving only the moving cost of $32,000.

Northern Continuing Education

Uranium City: Cost of providing services out of Uranium City unchanged.

Stony: Cost of providing the same service out of Stony is the same as providing it out of Uranium City.

La Ronge: Same costs are assumed.

Social Services

All services, including day care, social assistance, corrections and family services are assumed to cost the same whether provided from Uranium City or Stony Rapids. Day Care Centre, S.A.P., Correction, Family Services, assumed to cost same out of Uranium City or Stony.

La Ronge - Additional annual costs of $46,000 are assumed.

Economic Development

Services are assumed to cost the same out of Uranium City or Stony. La Ronge is assumed to cost an extra $10,000 annually.

H. Patient Travel Costs

Costs associated with sending patients out of the Athabasca region to Saskatoon, etc., for specialist services should be the same regardless of whether Uranium City, Stony or La Ronge were chosen as the regional centre. Thus there is no need to calculate them at all. Cost for trips to hospital within the region, whether Uranium City, Stony or La Ronge are shown below. It is assumed that fifty percent of these trips are by scheduled air service and fifty percent in charter aircraft.

Uranium City: Patients' annual travel from all centres in the region to Uranium City for general medical services would equal $50,400.

Stony: Patients' travel costs from all centres in the region to Stony for general medical services would equal $28,000.

La Ronge: Patients' travel costs from all centres in the region to La Ronge for general medical services would equal $266,000.

J. Doctors' Travel Costs

Uranium City: Costs of weekly visits to regional communities from Uranium City would equal $22,000.

Stony: Costs of weekly visits from Stony would equal $22,000.

La Ronge costs of weekly visits from La Ronge would equal $56,000.

K. Basic Transport Costs (see Item 1.K above) for Uranium City and Stony

Uranium City: It is assumed that Uranium City as the service centre would require twice as much transport as Fond du Lac does now. Under the present system it would therefore cost $200,000 to supply Uranium City as the service system. Under the most expensive alternative, it would cost $630,000. The difference would be $430,000. The difference between Uranium City at a population of 100 and Uranium City as the service centre would be $386,000.

Stony: The increase attributed to Stony as the service centre would be $430,000.

La Ronge: Not applicable.

L. Power

Uranium City: It is assumed that hydro power will continue to be provided by E.N.L. Power consumption included in operating budgets of users.

Stony: No increase in capital required as substantial excess generating capacity exists. Power consumption included in operating budgets of users.

La Ronge: No increase in capital required. Power consumption included in operating budgets of users.

M. Food Transport Subsidy

Uranium City: Total cost of food subsidy would equal $50,400. Subtract from this the basic subsidy for retaining Uranium City at a population of approximately 100. This equals $28,000 increase for Uranium City as the service centre.

Stony: Increase in cost of food subsidy equals $34,000.

La Ronge: No subsidy.

3. Costs Associated with Providing Hospitalization Services from Saskatoon with all other Services Delivered from La Ronge

In this scenario, it is envisaged that all people from the region requiring hospitalization would be taken to Saskatoon and that all provincial government services now provided from Uranium City would be provided from La Ronge.

Costs regarding hospitalization would therefore include any capital costs required to prepare Saskatoon for this role on an on-going basis plus any increase in annual costs. Patients' travel costs would complete the calculation as far as hospitalization is concerned. All other costs, aside from those involving hospitalization, would remain substantially unchanged from the La Ronge alternative and are not repeated here. Only those costs that differ from the La Ronge alternative are shown.

B_1 Health Facilities: While Saskatoon hospitals have a combined total of 1250 beds, the Hospital Boards of the three institutions point out that this is insufficient capacity to accommodate present demands. There are long waiting lists to get into any of the hospitals. In fact, waiting lists are longer in Saskatoon than in any other city in the

province. All hospitals are planning for expansion but it is anticipated that the current excess demand will not be relieved before 1990. It is argued that specific expansion plans would be required to accommodate the people of the Athabasca Region.

If the Athabasca population were to use one of Saskatoon's facilities, it would likely be the University Hospital inasmuch as many of their requirements are for pediatrics services, one of the areas of specialization at the University Hospital. However, it is not immediately clear what an appropriate cost figure would be. Estimates for the proposed expansion of City Hospital are for $267,000 per bed. This is for a very sophisticated facility, of course, but, on the other hand, it would probably not make sense to expand one of Saskatoon's hospitals in any way other than what is implied in this number. Still all of this cost could not be justifiably allocated to the requirements of the Athabasca population. Therefore, an arbitrarily chosen figure of one-half this amount is taken as an approximation. This sums to $2,670,000 capital costs. The La Ronge figure of $536,000 increased annual costs is used.

H. Patient Travel Costs: Because of the increased distances, patient travel costs are calculated to be $427,000 annually.

J. Doctors Travel Costs: It is assumed that doctors would visit the region from La Ronge at an annual cost of $56,000.

APPENDIX B

List of Persons and Agencies Contacted

Date	Name	Agency
November 24, 1982 and subsequent dates	Lucy Wynn, Sandy Latimer, Judy Taylor	Department of Health, S.H.S.P., Policy Research, Vital Statistics, Regina.
November 24, 1982 and subsequent dates	Doreen Lawrence, Linda Wilson,	Statistics Canada, Regina. Statistics Canada, Ottawa.
December 6, 1982	Brian Goffin	Central Planning, D.N.S., La Ronge.
December 8, 1982	Cliff Supernault, Director Len Neufeld, Education Director Richard Hankinson, Planner	Department of Indian Affairs, P.A. District Office, Prince Albert.
December 8, 1982	Ray Crozier, Director Nicki Brandon, Planner John Lehr, Planner	D.N.S., Community Planning Branch, Prince Albert.
December 8, 1982	Andy Horosko Laverne Moskal	D.N.S., Transportation Planning, (now part of Department of Highways), Prince Albert.
December 8, 1982	Dr. Bhemji, Director R. Shewchuk, District Health Nurse	Health and Welfare Canada, Prince Albert District.
December 10, 1982	Ed Fruson, Director	Department of Education, La Ronge Office.
December 13, 1982	Ray Rysavy, Assistant Director John Kreiser, Social Worker	Department of Social Services, Northern Region, La Ronge.
December 13, 1982	Carole Gray, Director Margaret Woods, Assistant Director of Nursing	Department of Health, Health Services Division, La Ronge.

Date	Name	Agency
December 13, 1982	Walter Seline, Schools Superintendent Ile a la Crosse, Uranium City, Creighton	Department of Education, La Ronge.
December 14, 1982	Joe Oliver, Town Administrator	Municipal Corporation of Uranium City.
December 14, 1982	Ray King, Hospital Administrator	Municipal Corporation of Uranium City.
December 14, 1982	Ed White Relocation Officer	D.N.S. Continuing Education, Uranium City.
December 14, 1982	John Cook, Radio Operator	D.T.R.R. (formerly D.N.S. Extension Services), Uranium City.
December 14, 1982	Ron Lafferty	Indian Metis Friendship Centre, Uranium City.
December 14, 1982	George Gartner, Manager	Canadian Imperial Bank of Commerce, Uranium City.
December 14, 1982	Michael Crowther, Manager	Hudson's Bay Company Store, Uranium City.
December 14, 1982	Manager	Sask. Government Liquor Board Store, Uranium City.
December 14, 1982	Mrs. Dana Spence, Manageress	Uranium City Hardware Store.
December 14, 1982	Meeting with Council and representatives	School Committee.
December 15, 1982	Dave Thomas, Geologist	Department of Energy and and Mines, Uranium City.
December 15, 1982	Wayne Angus, Corrections Officer	Department of Social Services (formerly D.N.S.), Uranium City.
December 15, 1982	Manager	Hollands Motel, Uranium City.
December 15, 1982	August Mercredi, Resource Development Officer	Fond du Lac Band, Fond du Lac.

Date	Name	Agency
December 15, 1982	Public Health Nurse	Health and Welfare Canada, Fond du Lac.
December 15, 1982	Band Member, Fond du Lac Reserve	Fond du Lac, Uranium City.
December 15, 1982	Hal Knutson, Central Region Director	D.T.R.R. (formerly D.N.S. Resources Branch), La Ronge.
December 15, 1982	Cal McLachlan, Director	North Sask Electric, La Ronge.
December 16, 1982	Jim Smart, Mike Brennan Brian Goffin	D.R.E.E. D.R.E.E. D.N.S.
December 21, 1982	Dr. Mel Lavallee, Medical Consultant	Federation of Saskatchewan Indians, Saskatoon.
December 21, 1982	Joe Anderson, General Manager	Key Lake Mining Corporation, Saskatoon.
December 23, 1982	Roy Lloyd, President David Francis, Executive Vice President	S.M.D.C., Saskatoon.
December 24, 1982	Ken Haapanen, Manager	Eldorado Nuclear, Saskatoon.
December 24, 1982	Marla McLean	Saskatchewan Air Ambulance, Saskatoon.
January 7, 1983	Walter Podiluk, Deputy Minister Stephen Pillar, Assistant Deputy Minister	Department of Social Services, Regina.
January 7, 1983	Bill Klassen, Deputy Minister	D.T.R.R., Regina.
January 7, 1983	Dr. Peter Glynn, A.D.M. Dr. Lewis, Dental Plan Marg Rappalt, Research Officer Hugh Walker, Community Health Services Rick Rogers, Executive Director, S.H.S.P.	Department of Health.

Date	Name	Agency
January 7, 1983	Virgil Nelson, Vice President Oscar Hansen	S.P.C., Regina.
January 10, 1983	Andrew Lindsay, Assistant Director, Health Services	Department of Health, La Ronge.
January 10, 1983	Bev. Sullivan	Department of Government Services, Prince Albert.
January 11, 1983	Mr. Ken Doepker, Assistant Director	Medical Health Services, Health and Welfare Canada, Regina.
January 12, 1983	Diana Ralph, Lecturer	University of Regina School of Social Work.
January 13, 1983	Don Campbell, Regional Co-ordinator	M.O.T., Regina.
January 13, 1983	Art Wakabayashi David James	Ministry of State for Economic Development, Regina.
January 13, 1983	Bill Howard, Director Richard Kellough, Director	Land Protection Branch, Environmental Assessment Secretariat, Department of Environment, Regina.
January 17, 1983	Stu Lovell Hospital Administrator	Lac la Ronge Hospital.
January 17, 1983	Terry Daniels, L.A.C. Overseer L.A.C. Council Members: Flora Natomogan, Jonas Hanson, Wayne Wood, Joe Tsannie, Chief Lac la Hache Band, Band Council Members	Wollaston Lake.
January 17, 1983	Public Meeting, Stony Rapids L.A.C. Overseer, Al Tokar, Matthew Yooya, Kathy Wright, Guy Levesque, Mary Jean Cassan, Arnie Anderson, etc.	Stony Rapids.

Date	Name	Agency
January 18, 1983	Cathy Wright, Public Health Nurse	Department of Health, Stony Rapids.
January 18, 1983	Al Tokar, N.M.C. Councillor	Northern Municipal Council.
January 18, 1983	Chief Leon Alphonse and Council Matthew Yooya, Band Administrator	Stony Rapids Indian Band, Black Lake.
January 18, 1983	Public Health Nurses	Health and Welfare Canada, Black Lake.
January 18, 1983	Chief Adolphus Mercredi	Fond du Lac Band, Fond du Lac.
January 18, 1983	Community Meeting - 110 people interested in staying in Uranium City-chaired by Mayor Rose Wasylenka	Uranium City
January 19, 1983	Stephen Oniske, Entrepreneur	Uranium City.
January 19, 1982	Public Meeting, Camsell Portage residents	Camsell Portage.
January 21, 1982	Julian Hawrysko	Northern Pipeline Agency, Calgary.
January 24, 1983	Frank Lay	Regional Director, M.O.T., Winnipeg.
January 24, 1983	Jim Buck	Divisional Manager, H.B.C., Edmonton.
January 26, 1983	Jim Smart Mike Brennan Brian Goffin	D.R.E.E., Regina D.R.E.E., Regina D.N.S., Regina
January 28, 1983	Frank Lay, Regional Director Mike Matthews, Civil Aviation Planning	M.O.T., Winnipeg.